

Landsat ETM+ Radiometric Calibration Results

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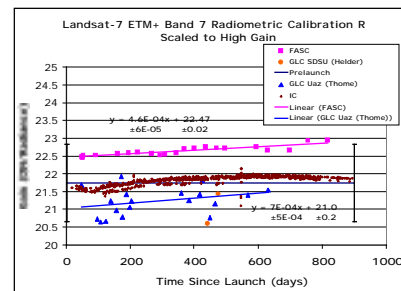
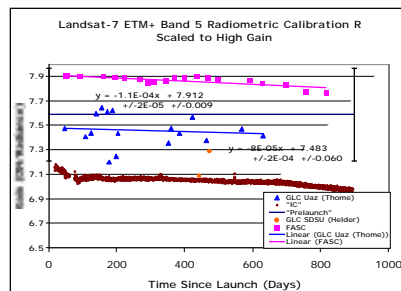
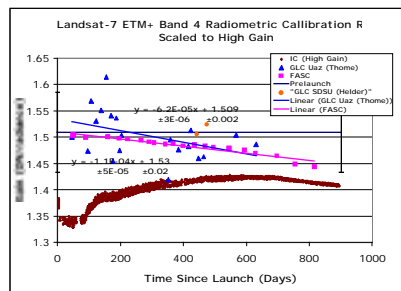
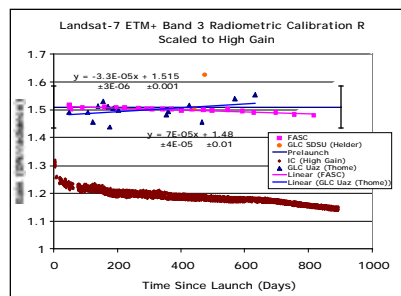
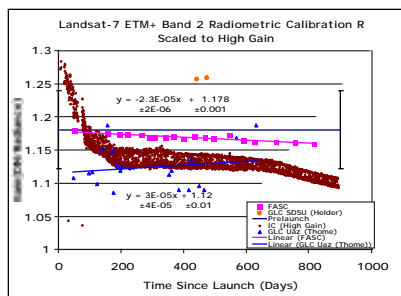
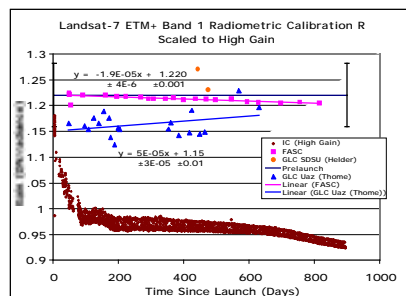
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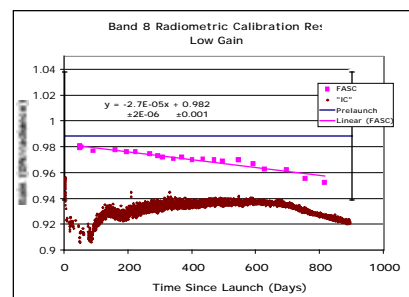
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The Landsat-7 ETM+ sensor has three on-board calibration devices for tracking radiometric calibration for the reflective bands. Science team members from University of Arizona and South Dakota State University have conducted ground look calibration campaigns in the western United States to validate the on-board calibration devices. This poster compares the results between the on-board calibration devices and the ground look campaigns for the reflective bands of the ETM+. Results between the pre-launch, Full Aperture Solar Calibrator (FASC) and the ground look calibrations continue to show agreement to within ~5% without strong evidence of trends. The IC data generally agree less well with the Partial Aperture Solar Calibrator, PASC (not shown), being the furthest off. The IC and PASC results are believed to be due the calibration devices deficiencies.

The ETM+ also has an on-board blackbody for tracking the calibration of the thermal band. Science team members from Rochester Institute of Technology and NASA/Jet Propulsion Lab discovered a constant offset error in the calibration. Using the validation data, the error was corrected by modifying a pre-launch parameter. This correction was fully implemented Jan 1, 2001, resulting in uncertainties at the 1% level.



Band 5 and 7 BRDF measurements were made on witness samples as opposed to the flight parts. Band 5 and 7 reflectance may also increase with water outgassing.



Notes:

1. The FASC results are calculated using the most stable portion of the FASC panel and have been adjusted for the apparent angular discrepancy between the expected sunrise on the FASC panel and the actual sunrise on the Panel (about 1°).

2. All results use the solar spectra chkur.dat from MODTRAN 4.

Though the on-board calibration was extremely stable (plots (c) and (d) ~days 0-600), the two vicarious calibration teams reported an error in offset (plot (a)) of 0.30 W/m² sr µm. This was corrected in the parameter file and processing system Jan 1, 2001. The post-correction vicarious calibration results are shown in plot (b). The discontinuity in plot (d) illustrates the correction in the offset.

Band 6 Vicarious Calibration Results

